Introduction: The Environmental Humanities and the Challenges of the Anthropocene

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The Environmental Humanities and the Challenges of the Anthropocene

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> The environmental humanities contextualizes and complements environmental science and policy with a focus on narrative, critical thinking, history, cultural analysis, aesthetics and ethics.

These lines are from *The Environmental Humanities Newsletter*, published by University of Oregon's Environmental Studies Program in 2014. Such programs and centres now proliferate in universities from North America to Europe and Australia, indicating the growing influence of this burgeoning field of study. As concisely defined in the opening pages of the *Newsletter*, the field of the Environmental Humanities is interdisciplinary. It brings the social sciences, the humanities, and the natural sciences together in diverse ways to address the current ecological crises from closely knit ethical, cultural, philosophical, political, social, and biological perspectives. Engaging with the global reach of old and new environmental challenges, values, environmental justice issues, and theoretical conceptions of the human and nonhuman natures, the Environmental Humanities address the complexities of material networks that cross through local and global cultures, economic and social practices, and political discourses. As Andrew Pickering concedes, science studies and the humanities 'are mangled in practice' (1995, 23) in a common effort to develop a comprehensive approach to the multifaceted aspects of environmental crises. It is therefore not surprising to observe that the Environmental Humanities offer a rich array of scholarship with combined insights from many research fields. They forge reconfiguration and extension of the notions of nature, agency, and materiality, which are intertwined co-constitutively in formulating new theoretical models of environmentality that coalesce human and nonhuman ecologies.

We are called upon to understand our liberal engagements with whatever is not human in causing global environmental changes and to recognize our worldly embodiments within systems of massive exploitation of limited natural capital. The ways in which we are immersed in the more-than-human environments point to a 'vortex of shared precariousness and unchosen proximities' (Cohen 2015, 107). They can also be understood in terms of what Timothy Morton, in *The Ecological Thought*, calls 'coexistentialism' (2010, 47). These conceptual frameworks enable discussion of how we are also ethically entangled with the nonhuman, this 'strange stranger' at once unpredictable, intimate, and uncanny—whose presence prompts us to rethink the scope of our deeds and attitudes. The pivotal question here is: how will new modes of knowing and being, which the Environmental Humanities call for, enable environmentally just practices? They in fact limn the field with possible answers about how to relate to that which is beyond human dichotomies, which is both vulnerable and dangerous, distant and proximal, and which is risky and familiar at the same time. Such is the material world of nonhuman agencies, which is bound up with the human reality on many scales and levels, from viruses and bacteria to geological forces. The evidence emerging from research focused 'on the interface between social and biological systems' (Heise and Carruth 2010, 3) already epitomizes how the human is always already enmeshed, to quote Stacy Alaimo, 'within the material flows, exchanges, and interactions of substances, habitats, places, and environments' (2011, 281). Therefore, we need 'complex modes of analysis that travel through [these] entangled territories' (282), conceptual patterns that allow us to follow the 'frictions' of natures and beings into a contaminated dimension of 'transformative encounters' (Tsing 2015, 28), so insightfully mapped by Anna Tsing. What is happening to the Earth's climate, for example, is also 'occurring on all levels of the material, social, and cultural fabric of the world, including the micro level of the individual and his or her life-style' (Rossini 2012). That is why environmental problems are not the concerns of Earth scientists only. They are also social and cultural, philosophical and political, as their insidious signals of precariousness and risks have long extended into the social sphere—a sphere where, after all, they are also rooted. As Uwe Lübken and Christof Mauch put it, 'environmental risk is not simply a phenomenon "out there" but the result of social, economic and cultural processes' (2011, 112). Food scarcity, poverty, water and air pollution, social injustices and gender inequalities, energy demands, and climate-related health challenges are only some of the conditions to rethink the social in ecological terms and vice versa. The geo- and biopolitical consequences of this discourse on a global scale are also expectable. As Kathleen McAfee writes,

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> The politics of nature cannot be neutral . . . [It] is ultimately about who is entitled to what, who owes what to whom, how such rights and entitlements are to be enforced, and who gets to decide. In a world of great geographic variety and vast social difference, decisions and actions by states and others, or inactions opting for the status quo inevitably have consequences that affect some people and places very differently than others. (2016, 65)

The fundamental argument, then, fuelling the research in the Environmental Humanities is that the urgent environmental problems that stretch from the geological to the biological are also essentially social and cultural issues deeply interwoven with economic and political agendas and thus demand solutions on many dimensions. These dimensions include building new environmental imaginaries, formulating new discursive practices, and making changes in economic and political structures. The ongoing anthropogenic process and their various combinations aggregate many levels not only of human wellbeing (Di Paola 2015, 184, 185) but also the wellbeing of all planetary life. Political scientist Marcello Di Paola is correct in claiming that we are all confronted with an ethical task 'when trying to live in a better integrated relationship with the dynamic systems that govern our changing planet' (185). Hence, the significance of ethical as well as critical reflection with regard to the wounded body of the planet by human activities. In the same vein, science studies scholars Eileen Crist and H. Bruce Rinker issue a stern warning: '[T]o rip into the planet's rhythms, cycles, and interconnections, as the civilization we have created is doing, signals human folly not mastery. For one, the Earth system is ultimately unpredictable and more powerful than humanity's actions' (2010, 13). Such warnings have invited intersectional academic responses to the injured habitats and beings. The spirit underlying these responses is lucidly expressed by what Stephanie LeMenager and Stephanie Foote have called 'the sustainable humanities': humanities that 'can also confront hyperindustrial modernity in the era of unconventional energy mining, of fracking, tar sands, and mountaintop removal, with the unfashionable but nonetheless ecological concept of civic responsibility' (2012, 574).

With their ethical-educational project of creating alliances between science, society, and cultural discourses, the Environmental Humanities are the very materialization of this vision. And 'materialization' is not a neutral word in this context. In fact, taking ecological relationships as their straightforward thematic referent, the Environmental Humanities veer off the idea of culture and education as 'spiritual' abstractions. At once they lay bare the production processes and impacts of their own means and media—be they books, archives, artworks, digital devices, or classroom teaching—and the costs of anthropocentric mindsets and practices for the health of the planet. The theoretical frameworks and reflections they articulate are de facto instrumental

to *practices* meant to better interpret the matter and meanings of human interconnectedness with the nonhuman. This is why it is so important, in this context, to develop convincing and comprehensive epistemological tools.

Many subfields in the Environmental Humanities—ecocriticism, environmental philosophy and history, critical animal studies, queer ecologies, ecofeminisms, environmental sociology, political ecology, ecomaterialisms, and posthumanism, among others—hold the conviction that the wounds of the natural world are also social wounds and that the planetary ecological crisis is the material and historical consequence of an anthropocentric and dualistic worldview. Fraught with nature/culture, human/nonhuman, man/woman, East/West, North/South, and ecology/economy binary oppositions, this 'inflated anthropocentric credo' (Crist and Rinker 2010, 13) acts as the driving force behind economic growth, political strategies, and technological development—all to the detriment of the Earth's life support systems. At the root of all ecological crises, in other words, lie the divisive epistemologies that create an illusory sense of an ontological dissociation between the human and the nonhuman realms. The legacy of this dissociation explains why the planetary environment today is seen as 'a swirling biogeochemical *playground* whose elements combine to form patterns, cycles, and circulations of landscapes, species, and ecologies' (Thomashow 2001, 3; emphasis added), resulting in the relentless disruption of the Earth's rhythms, biocycles, species connections, and ecosytemic processes.

One of the daunting consequences of the dissociative thinking that we are currently experiencing is global climate change, which affects the Earth's living fabric with melting glaciers, ocean acidification, extreme heats, droughts, floods, increased tornado and hurricane activity and intensity. Other distressing events linked to climate change—such as water resource depletion, extinction of valuable species, climate-related diseases, and mutating viruses—have also resulted from the 'anthropocentric credo' in its long historical path. The social impact of this array of phenomena is clearly unequal. As Marco Armiero suggests, to repeat that 'we are all in the same boat . . . occludes at least as much as it reveals' (2015, 52): not all, in this boat, are first-class travellers, and not all will be saved if (or when) it will shipwreck. The impact that these phenomena have on cultural models and discourses, in turn, is ambivalent. On the one hand, ecological changes have triggered revolutionary ways of rethinking human relations to the more-than-human environments as indicated by the new materialist theories. On the other hand, however, the ideological, ethical, and social dimensions of global climate change have made environmentalism more complicated and fraught with controversy than ever before.

All this is mainly due to the fact that human relations with the planet at large and with local ecosystems on national and regional scales have so far

been grounded in unsustainable practices that rely on systems of domination and 'hyperseparation', as explained by the ecofeminist analyses of thinkers such as Karen Warren and Val Plumwood. According to this vision, social as well as ecological relationships are framed within 'the logic of Othering' (Plumwood 2002, 117) that subjugates not only humans and sentient animals but also everything else that is exploitable. This radicalized 'hyperseparation', however, creates in the dominant subjects the illusion of their 'disembeddedness', thus blocking their own survival. It is, therefore, imperative to seek new modes of thought that would shift our mindset towards a disanthropocentric discursive change, which in turn will create and implement more sustainable economic practices, social behaviors, and moral paradigms. The fundamental impediment in the way of this objective is the collective mind the majority of people share in relating to the world. And this anthropocentric mindset is a perfect example of resistance to change as it operates, in Claire Colebrook's words, as 'hyper-Cartesianism' (2015, 169)—an amplified version of the separation of the subject from the object, rewritten in terms of an ontological gulf dividing the social and the natural. When one considers the intersecting and often messy biophysical and social realities, however, human/nature dualisms lose their grounding. We begin to rethink the dynamics of life through the fundamental inseparability of the human and the nonhuman in their shared earthly rootedness. We come to recognize the fact that, against scientific (and cultural) paradigms that objectify and commodify all life, the Earth, as Bruno Latour contends, 'is no longer "objective"; it cannot be put at a distance and emptied of all its humans. Human action is visible everywhere—in the construction of knowledge *as well as* in the production of the phenomena those sciences are called to register' (2014, 6). And something that our sciences cannot help registering is that, radically and profoundly, we are trans-corporeal subjects, undeniably embroiled in the Earth's biophysical processes along with other species.

Like other biological entities, we all carry nature within us even if we think of members of our species as discrete beings unaffected by the punctured ecosystems and human-induced environmental stresses placed on the natural world. As Anna Tsing puts it, '[t]he evolution of our "selves" is already polluted by histories of encounter; we are mixed up with others before we even begin any new collaboration' (Tsing 2015, 29). In other words, '[e]veryone carries a history of contamination; purity is not an option' (27). The human microbiome is alive with trillions of microbial cells—bacteria, fungi, archaea, sometimes viruses, and other swarming microscopic organisms that make us all interspecies beings. In his short essay 'The New You', Anthony Doerr compellingly writes that 'if you decided to name one organism every second (You're Barbara, You're Bob, You're Brenda), you'd likely need fifty lifetimes to name them all'. He is right in claiming that from the moment we

are born, 'we are colonized, seized, and occupied by other entities', and '[t]o even write that you are "you" and the microbes are "them" is, perhaps, a failure of pronouns'.[1] The Environmental Humanities engage with this complicated *naturalcultural* landscape and transitive 'pronominality'. But they also engage with stories, discourses, and narratives that disclose the proximal relations among bodily natures and the environments within which they are inseparably enmeshed. As Donna Haraway insists, 'all earthlings are kin in the deepest sense . . . Kin is an assembling sort of word. All critters share a common "flesh", laterally, semiotically, and genealogically' (2015, 162). The main idea that is highlighted in this new understanding of natures and cultures, or *naturecultures* in Haraway's terms, is that—ecologically as well as evolutionarily—the body circulates through the environment and the environment circulates through the body. And whether it is a human or a nonhuman body, or whether it is a microscopic or a geological body, all bodies are inscribed with the flows and mutual transformations of material and discursive elements. One need only to remember here that ecological knowledge can never be disentangled from philosophical inquiries about the nature of nature, from political decisions about energy and resource use, and thus from the regimes of power and ethical concerns accompanying social complexities. Simply because, as Karen Barad explains, 'our knowledge-making practices are social-material enactments that contribute to, and are a part of, the phenomena we describe' (2007, 26).

Moreover, if 'human ideas, meanings and values shape and are shaped by, in some important way, the "environment out there"', as Astrida Neimanis, Cecilia Åsberg, and Johan Hedrén state, 'questions traditionally belonging to natural sciences and engineering domains are thus equally questions for the humanities' (2015, 71–72). Therefore, the solutions offered by natural scientists remain incomplete as they seem to neglect cultural values and social practices, but most importantly 'sociocultural imaginaries' (81) that influence ecological practices. 'Natural scientists', as the Swedish environmental historian Sverker Sörlin also writes, 'suggest solutions, aided by technology, economics, and policy' (2012, 788). Or they investigate the large-scale impacts of climate change on ecological systems, producing formidable data with reports of warning and serious risk scenarios on the destabilized Earth systems. The field of the Environmental Humanities, on the other hand, concentrates its energy on the ways in which such data is effectively translated into narratives and socio-cultural discourses that capture the public attention as well as political and economic agencies more arrestingly than scientific reports can do. As Donna Haraway contends, 'we need stories (and theories) that are just big enough to gather up the complexities and keep the edges open and greedy for surprising new and old connections' (2015, 160). Addressing the intersecting social and ecological problems from new

ecological perspectives and perceptions, the Environmental Humanities bring attention to the significance of formulating 'stories (and theories)', narratives and discourses that would be accountable to ecologically sustainable social, economic, and political practices. This implies that, once human agency is set in a horizon of space-time-matter which is broad enough to encompass its innumerable ties, the discourse of the Environmental Humanities can also be instrumental in '[scaling] up our imagination of the human' (Chakrabarty 2009, 206), at the same time reinforcing the memory of our contact zones with the nonhuman world.

In 'Thinking through the Environment, Unsettling the Humanities', Deborah Bird Rose and her colleagues explain that in the Environmental Humanities

> we are able to articulate a 'thicker' notion of humanity, one that rejects reductionist accounts of self-contained, rational, decision making subjects. Rather, the environmental humanities positions us as participants in lively ecologies of meaning and value, entangled within rich patterns of cultural and historical diversity that shape who we are and the ways in which we are able to 'become with' others. (Rose et al. 2012, 2)

If we cohabit this trans-corporeal site of knotted agencies and encounters, and if it is impossible to get disengaged from this turbulent *oikos*, we can begin thinking of it as the site of unremitting becomings, meetings, transformations, representations, and narratives, which constitute the research objectives of the Environmental Humanities. Conceived this way, 'the whole world, at all scales, is a "contact zone". The deepening environmental and social crises of our time are unfolding in this zone where the nature/culture divide collapses and the possibilities of life and death for everyone are at stake' (2). It is thus AQ4 important to reiterate that 'humanistic disciplines may help us understand and engage with global ecological problems by providing insight into human action, perceptions, and motivation', as expressed in 'Humanities for the Environment—A Manifesto for Research and Action' (Holm et al. 2015, 978). This 2015 Manifesto stresses the significance of the 'human factor' in investigating the 'biogeophysics of global change' (979) as it is not included in scientific calculations. In Sörlin's words, '[i]t seems this time that our hopes are tied to the humanities' (2012, 788). Or, espousing LeMenager and Foote's passionate claim, '[a]t the risk of sounding grandiose, Earth needs the humanities' (2012, 575).

It is in this framework that the Environmental Humanities seek to develop new convivial partnerships between the humanities, natural and social sciences, the fine arts, and other fields in order to devise and practice new critical humanisms. In producing 'sustainable artifacts and socialities' (Le

Menager and Foote 2012, 574), these transdisciplinary crossings are indeed a way to reaffirm critique 'as a kind of making'—almost an 'infrastructure' (574) for building inclusive forms of citizenship and projects of 'multispecies ecojustice' (Haraway 2015, 161). Offering new conceptualizations for the contact zones of human and more-than-human natures and environments, as well as new directions, posthumanisms, for example, are key modes of these critical forms of the Humanities. Rosi Braidotti's ground-breaking reflections on the role of the 'posthuman Humanities' are here a mandatory reference. Posthumanism, Braidotti argues, provides the humanities with 'a new set of narratives about the planetary dimension of globalized humanity; the evolutionary sources of morality; the future of our and other species; the semiotic systems of technological apparatus; . . . the role of gender and ethnicity as factors that index access to the posthuman predicament and the institutional implications of them all' (2013, 162–163). Developing on these insights, in 'Four Problems, Four Directions for Environmental Humanities: Toward Critical Posthumanities for the Anthropocene' (2015), Astrida Neimanis, Cecilia Åsberg, and Johan Hedrén present four specific directions to address what they delimit as four problems: 'alienation and intangibility; the post-political situation; negative framing of environmental change; and compartmentalization of "the environment" from other spheres of concern' (67). In order to tackle these problems, the authors suggest that we need to formulate 'diverse environmental imaginaries', rethink the field in terms of 'naturecultures and feminist posthumanisms', develop the field 'in a specifically transdisciplinary and postdisciplinarity vein', and create a 'citizen humanities' (70). All these spheres must be thought in terms of interconnected entanglements rather than homogenous connections that project a 'blanket humanity' (Vansintjan, 2016).[2]

Even if we perfectly know how distant it is from the grain of reality, such a universalizing conception of humanity traverses the accounts of the Anthropocene, too often reductively thought of as the epoch of the 'great homogenization' of terrestrial systems and fates under the geological layer of *the* human. Seeking less vague articulations, however, the Environmental Humanities not only conceptually challenge the Anthropocene's unilateral image of the human agency but also subvert its formulations that focus mostly on geological time scales. With their intersectional analyses, the Environmental Humanities reveal indeed that the Anthropocene concept involves 'much more than "just" geology' (Parikka, 'Introduction'). More precisely, filtering the Anthropocene through the lens of their disciplinary mergers is a way, as Jussi Parikka effectively puts it, to prove that geology itself 'does not refer exclusively to the ground under our feet. It is constitutive of social and technological relations as well as environmental and ecological realities' (Chapter 2). One of the primary goals of this collection is, therefore,

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to present different voices and conceptual models emerging from the sites of the Anthropocene discourses, such as those oriented in new feminist, spiritual, ecocultural, and nonhuman onto-epistemologies. As the subtitle of this volume indicates, the 'Voices from the Anthropocene' join the ongoing multidisciplinary conversations in the Environmental Humanities, mingling geological, biological, ecological, political, cultural, and social matters in working with 'questions of meaning, value, ethics, justice, and the politics of knowledge production' (Rose et al. 2012, 2). This approach of thinking through and with the more-than-human agencies corrects the scientific accounts of the Anthropocene and repudiates their image of an exceptional and universal human subject acting as an epoch-making geological force, The title of Will Steffen, Paul J. Crutzen, and John McNeill's article, for example, is: 'The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?' In their conclusion, the authors claim that '[h]umans will remain a major geological force for many millennia, maybe millions of years, to come' (618). The idea of a 'blanket humanity' as an omnipresent planetary force, however, is due to the colossal scale of human impact on the planet's biogeochemical processes that make the scientists claim that the present interglacial era—the Holocene—should be called the Anthropocene, as the term signifies the profound 'chemical and biological effects of global human activity' (Zalasiewicz et al. 2010). In *The Earth after Us*, Jan Zalasiewicz observes that 'if we make enough of a mess of the world, we might compete with the Yucatan meteorite, or with the mysterious forces that, almost exactly a quarter of a billion years ago, suffocated most of the Earth's oceans and killed off an estimated 95 percent of the world's species' (2008, 156–157).

Originally coined by the atmospheric chemist Paul J. Crutzen and biologist Eugene Stoermer, the term Anthropocene came to signify 'the geology of humanity'. Considering the 'still growing impacts of human activities on earth and atmosphere' (17), in their famous essay 'The Anthropocene' (2000), Crutzen and Stoermer write:

> it seems to us more than appropriate to emphasize the central role of mankind in geology and ecology by proposing to use the term 'anthropocene' for the current geological epoch. The impacts of current human activities will continue over long periods. According to a study by Berger and Loutre . . . because of the anthropogenic emissions of CO_2, climate may depart significantly from natural behaviour over the next 50,000 years. (17)

Since the scientific accounts of the Anthropocene focus on the global scale of human impact on planetary systems, the depiction of the human as a geological force occasions what Andrew Revkin calls 'a hubristic overstatement of human powers' in his 2011 article in *The New York Times.* The popular

accounts of the term reinforce this vision of 'man' as a geological force as well. The website called 'anthropocene.info', for example, announces that 'we're disrupting the grand cycles of biology, chemistry and geology . . . We're changing the way water moves around the globe as never before. Almost all the planet's ecosystems bear the marks of our presence' ('Welcome to the Anthropocene'). Also, the editorial on 'The Anthropocene', again in *The New York Times* on 27 February 2011, is similarly formulated: 'We are the only species to have defined a geological period by our activity—something usually performed by major glaciations, mass extinction and the colossal impact of objects from outer space'. To describe the human agency as a geophysical force is perhaps the major conceptual challenge the Anthropocene poses for the Environmental Humanities. One of the most discussed accounts of this challenge is found in postcolonial historian Dipesh Chakrabarty's article 'The Climate of History: Four Theses'. 'To call human beings as geological agents', writes Chakrabarty, 'is to scale up our imagination of the human. Humans are biological agents, both collectively and as individuals. But we can become geological agents only historically and collectively' (2009, 206). This can happen, Chakrabarty continues, if we invent technologies 'that are on a scale large enough to have an impact on the planet itself. To call ourselves geological agents is to attribute to us a force on the same scale as that released at other times when there has been a mass extinction of species' (207). However, this claim that—though conditionally—we can become geological agents is highly problematic as it involuntarily makes Chakrabarty's account subscribe to the same conceptual challenge that he attempts to critique. Furthermore, in his fourth thesis Chakrabarty also holds that '[e]ven if we were to emotionally identify with a word like *mankind*, we would not know what being a species is, for in species history, humans are only an instance of the concept species' (220). Certainly, the pronoun 'we' creates confusion about the categories of gender and sexual orientation—let alone ethnic identity and socio-economic status—by pushing all humans into the concept of 'mankind'. While pointing out humanity's dysfunctional relationship to the Earth's ecosystems, such statements underwrite an anthropocentric arrogance, which also conceals profound differences in the degree of responsibility attributable to distinct subsets of humanity. In this volume we have aimed to contest this hubristic formulation of the Anthropocene and discuss it in all its complexity, at once ecological, ontological, and socio-political.

Considering that issues of formulation and naming occupy a big part of the Anthropocene discourse, an analysis on terminology is also a necessary task. In fact, very much like Aristotle's being, the Anthropocene 'is said in many ways'. Some of these ways might sound ferociously ironical. Jussi Parikka, for example, calls it 'Anthrobscene', a term that explicitly qualifies the 'unsustainable, politically dubious, and ethically suspicious practices that

maintain technological culture and its corporate networks' ('Introduction'). Kathleen Dean Moore goes further, proposing to name it 'the Unforgivable-crimescene' or simply 'the Obscene' (from the Latin *obs-*: against, onto; and *-coenum*: filth), a term that evokes 'the layers of rubble that will pile up during the extinction of most of the plants and animals of the Holocene—the ruined remains of so many of the living beings we grew up with, buried in human waste' ('Anthropocene'). In another key, those who emphasize the increasing standardization of global ecosystems, due to the massive introduction of alien species that drive to extinction the local and often unique ones, talk of the 'Homogenocene', a new biological epoch, inaugurated by Columbus' travels, characterized by 'mixing unlike substances to create a uniform blend' and where 'places that were once ecologically distinct have become more alike' (Mann, 'Introduction'). This resonates with Tsing's discussion of the plantation model in her *The Mushroom at the End of the World.* In its 'scalability', namely, in its total abstractedness from the contexts and subjects it involves, the colonial plantation is indeed a model based not only on homogeneousness but also on alienation: it is an imported power structure that standardizes production processes by disconnecting native species, isolating workers, exploiting labour, and radically transforming environments and biocultural relationships (Tsing 2015, 38–43). The colonial plantation opens an epoch in which, regardless of places and ecologies and unlike the 'dynamic multispecies diversity of the forest' (40), everything is 'interchangeable' (39). The idea that natural cycles are not impermeable to capital has inspired others to use the term 'Capitalocene', a definition—proposed somehow independently by Andreas Malm, Jason Moore, and Donna Haraway—to indicate an age in which 'capitalism is understood as a world-ecology, joining the accumulation of capital, the pursuit of power, and the co-production of nature in dialectical unity' (J. Moore 2014). To this term, Haraway adds two more: Plantationocene and Chthlucene. Whereas the first (collectively elaborated during a seminar in Aarhus) refers to 'the devastating transformation of diverse kinds of human-tended farms, pastures, and forests into extractive and enclosed plantations, relying on slave labor and other forms of exploited, alienated, and usually spatially transported labor' (2015, 162), the second is in turn a trans-terran collaborative vision: 'a name for the dynamic ongoing sym-chthonic forces and powers of which people are a part, within which ongoingness is at stake' (160). In fact, at a time when the Earth is 'full of refugees, human and not, without refuge' (160), the only way to exist 'as mortal critters . . . is to join forces to reconstitute refuges, to make possible partial and robust biological-cultural-political-technological recuperation and recomposition' (160).

In light of such discussions, the Anthropocene forces us to rethink the human condition, climate, other species, and the Earth's biogeochemical

processes, something which is reinforced as we think that, as Ben Dibley has stated, the Anthropocene can be defined as 'the folding of human into the air, into the sea, the soil and DNA' (2012, 139). When human and nonhuman bodies fold into one another in these processes, and when human beings are caught in the networks of earthly materiality and economic and political forces, moving through the Anthropocene becomes a precarious ontological performance in 'the world's differential becoming' (Barad 2007, 149), rather than an enactment of a grandiose narrative that emplots the human species as an epochal geo-force. This approach attempts to find alternative figurations. Donna Haraway and Karen Barad's views of life in terms of entangled agencies and converging forces are particularly useful in reconfiguring the subjects of the Anthropocene, the *anthropoi*, as human subjects (in the plural) with multiple corporeal, cultural, and social specificities, not an abstract male subject engaged in epoch-making planetary transformations. To challenge this problematic conception of the human subject, as well as the 'naturalization of social relationships' and the 'de-politicization' (Armiero 2015, 53) of the Anthropocene discourse in its hubristic versions, we need to think across humans, nonhumans, bodies, natures, cultures, classes, and the physical environments 'in ways that highlight their interactions' (Alaimo 2014). And this also entails a cross-species project, one of 'collaborative survival', as Anna Tsing also underlines: in fact, 'staying alive—for every species—requires livable collaborations. Collaboration means working across difference . . . Without collaborations, we all die' (Tsing 2015, 28). Consider, for example, the disappearance of bee colonies worldwide and how catastrophic the consequences would be for food production, not to mention the health of ecosystems.

Such a rethinking transforms the hyper-Cartesian dream of mastery into a disanthropocentric alliance of entangled subjects that ostensibly work with, through, and across material agencies that comprise the world. Moving through the Earth's innumerable agentic forces, we come to realize that being part of the Earth's physical systems we cannot perpetuate the image of a disembodied and petrified figure as the *anthropos* causing planetary alterations. This also suggests that even culture and its means can no longer afford such a self-deceptive dream. After all, the immense proportions of mineral extraction and chemical transformations that allow industrial development are also to be traced in the tools we use every day, our computers, our cell phones, our digital media. And so, issues of energy turn into issues of geophysics, and we find that 'the deep time of the planet is inside our machines, crystallized as parts of the contemporary political economy: material histories of labor and the planet are entangled in devices, which . . . unfold as part of planetary histories' (Parikka, 'Conclusion'). AQ9

What underlies all these considerations is that the Anthropocene issues are also about imagining and visualizing the entanglements, the agencies,

the connections, and their social and political consequences. In fact, if the human has become a geological force, the Anthropocene 'body politic' is not the same as it was before: it includes the built environment as well as forests, body cells as well as vegetation and fauna, domestic animals and melting glaciers; it entails issues of political freedoms and individual wellbeing, as well as energy democracy and global pollution. In the age of the Anthropocene, 'body politic' is a collective of agents and of processes, themselves resulting from collective agencies and dynamics. It is the Earth, in its geological, chemical, and biological cycles.

It must be clear by now that the Anthropocene is a contested and problematic term, and the intrinsic difficulty here is about conceiving of the immemorial plotting of geology and life as intermingled with human activities over time spans that transcend the limited scope of our mind's eye. At the same time, crucial to this endeavour is to question naturalizations and presumptions of innocence that perpetuate forms of injustice, both ecological and social. It is for this reason that we need more and more critical and imaginative tools to *comprehend* the Anthropocene. This is a point that Alexa Weik von Mossner has clearly made, by saying that '*all* stories about the Anthropocene keep pushing against the boundaries of what is currently imaginable' (2016, 85). With their extended critical imagination and theoretical tools, the Environmental Humanities challenge these very boundaries allowing us to visualize and voice these stories and their subjects. In other words, they 'fill in this deficit of the social imaginary and help us think the unthinkable' (Braidotti 2013, 160), thus proposing themselves as the 'Anthropocene Humanities' (159).

The chapters in this volume try to offer insightful ways to increase this imagination and sharpen our understanding of this biogeochemical network of agencies, which has surprisingly ended up bearing our name.

Opening with a Foreword by the British writer and ecocritic Richard Kerridge, *Environmental Humanities: Voices from the Anthropocene* is divided into four sections. In the first section, 'Re-mapping the Humanities', our contributors, moving from the vantage point of their respective fields and orientations, reflect about the way to extend the disciplinary boundaries in order to create more fruitful connections that could shed light on the numerous (and unpredictable) objects that emerge from the layers of the Anthropocene. In the first chapter, 'Posthuman Environs', Jeffrey J. Cohen explores the connections between language and materiality. Overturning the picture of the Anthropocene as an epoch in which humans inscribe themselves into stone, becoming at last a part of the geological record, Cohen looks at how matter inscribes itself into the human record, becoming part of our linguistic archive. Three resonant words signal this Disanthropocene: *tsupu*, *woof*, and *fnorte th*. Each reverberates across cultures and time to open a story of matter's

bustling agency, enduring companionships, and the limits of community. The second chapter, 'Environmental History between Institutionalization and Revolution: A Short Commentary with Two Sites and One Experiment' by Marco Armiero, investigates the contribution of environmental history in the shaping of the environmental humanities, in particular reflecting on the dialectic between adaptation to/transformation of the broader academic and disciplinary context. As he maintains, the challenge for an emerging field of studies seems always to be the choice between a transformative, or even revolutionary, project and the incorporation into the mainstream academic setting. Through 'one experiment' (the Anthropocene Cabinet of Curiosities Slam) and 'two sites' (the nation and the body), Armiero illustrates the decisive function of environmental history not only in complementing traditional historical discourses but also in consolidating the bases of the Environmental Humanities and making their themes more accessible to the general public. In the third chapter, Hubert Zapf's 'Cultural Ecology, the Environmental Humanities, and The Transdisciplinary Knowledge of Literature', literary topics enter the scene. From the angle of cultural ecology, Zapf investigates how the place and function of literature and literary studies can be newly assessed as a distinct form of transdisciplinary ecological knowledge within the Environmental Humanities. Discussing topics such as postcoloniality and ecoglobalism, metaphor and ecological knowledge, Zapf evinces a number of contexts in which cultural ecology can be used as a means to reinforce the ties between the cognitive experience of literature and the environmental humanities. The fourth chapter, 'Where Is Feminism in the Environmental Humanities?' by Greta Gaard, reflects on the apparent exclusion of feminism in the broad definitions of our field. The most worrying consequence of this absence is that it limits the reliability and utility of Environmental Humanities research and teaching. However, to uncover feminism in the field, Gaard claims, we can look not only at the presence of diversity in the perspectives of scholars or in Environmental Humanities curricula, but, more importantly, we can explore the topics chosen for research and study, considering how the research questions are defined and the methods for researching those questions. Gaard's chapter explores seven key features of feminist methodology, discussing how these features contribute to our understanding of human–human, human–animal, and human–environmental interactions, framing the challenges of climate change and our future on Earth. The fifth chapter, Scott Slovic's 'Seasick among the Waves of Ecocriticism: An Inquiry into Alternative Historiographic Metaphors', returns to the theme of literary studies, this time using the standpoint of ecocriticism. He first goes over the metaphors used to describe the trajectory of the discipline in the time of its academic 'canonization' and discusses their benefits and limits. Then, in this concise chapter, Slovic proposes alternative figures, insisting in particular on

metaphors that highlight the interdisciplinary potential of ecocriticism as we enter the era of the Environmental Humanities.

The second section, 'Voicing the Anthropocene', comprises five chapters. Even if the Anthropocene appears regularly in most of the volume's essays, it is in this section that this notion is most specifically addressed. From their own fields of research and experience, the authors of this second part suggest visions and interpretations that use this new geological epoch as a prism to 'diffract' the various entanglements of our time. The first chapter, 'The Extraordinary Strata of the Anthropocene', is written by Jan Zalasiewicz. The rocks of the Earth, a vast and complex data storehouse, says Zalasiewicz, are the source of Earth history. Considering the characterization and potential formalization of the Anthropocene, he explains that, though geologically terribly brief, the Anthropocene is the latest phase of Earth history. It was first revealed more from observation of recent trends in properties of the atmosphere, oceans, ice masses, and biota than by analysis of strata. Its strata, from icecap to ocean floor to cityscape, are revealed as distinctive and geologically extraordinary and help place this new phase of our planet's history in the context of deep time. To understand the Anthropocene, he claims, one must understand the effect of the human drivers, but he also claims that this should not mean that the driving force should necessarily be ascribed to 'humanity per se'. The second chapter, J. Baird Callicott's 'Worldview Remediation in the First Century of the New Millennium', calls for an adjustment of our general perspectives concerning the Anthropocene problematics and suggests that new social ontologies should be more commensurate with the current political and environmental problems. In this discussion, Callicott focuses on 'interdisciplinarity' as the watchword of the Environmental Humanities, which for him signifies a disciplinary hybridity reintegrating the 'two cultures' lamented by C. P. Snow in the 1950s. He considers environmental philosophy as a case in point of the integration of the ecological sciences with the humanities as are conservation biology and ecological economics. In the third chapter, 'We Have Never Been "Anthropos": From Environmental Justice to Cosmopolitics', Joni Adamson, too, emphasizes how problematic the term *anthropos* is as it has come to mean 'aggregate *Anthropos*', or 'all humans', which fails to account for unequal human vulnerabilities. Adamson's chapter discusses Alejandro González Iñárritu's 2006 film *Babel*. The film's title alludes to the story of the fall of the Tower of Babel, a story that has long served as a thought experiment for examining notions of cosmopolitanism in a world where modern nations are failing to communicate, cooperate, and make sense of each other. For Adamson, *Babel* presents opportunities to examine the 'babble' of confusion around the intellectual genealogy of 'American Studies'. She argues that what environmental humanists gain through a more precise use of the terms

'American Studies' and 'environmental justice' is a better understanding of the entangled debates over keywords central to both American Studies and the Environmental Humanities, including Anthropocene, *anthropos*, exceptionalism, nationalism, cosmopolitanism, multiculturalism, localism, globalism, and environmentalism. The fourth chapter in this section, 'Resources (Un)Ltd: Of Planets, Mining, and Biogeochemical Togetherness' by Filippo Bertoni, explores the metabolic transformativity of the earthly togetherness of microbes and its excesses—by-products, life forms, and forms of living. With its focus on the Iberian Pyrite Belt, this chapter explains how the ores of Río Tinto feed a complex and delicate underground microbial ecosystem with references to a team of astrobiologists from the Centro de Astrobiología in Madrid that studies these extremophiles as possible analogs for life under the surface of Mars. If we take the Iberian Pyrite Belt seriously as a Mars analog, Bertoni states, we can similarly think of the specific metabolic relationality of its chemolithotrophs and the planetary relationality of the sciences that shaped Earth and Mars as we know them as analogs to imagine extraction. The fifth and the last chapter of this section, 'Lacuna: Minding the Gaps of Place and Class' by Lowell Duckert, delves into the shallow bodies of water known as *lagoons*: fresh- or saltwater lakes separated from the sea or a nearby larger lake or river. 'Lagoon' derives from the Latin word for 'pool', *lacūna*, which comes from *lacus* ('lake'). 'Lacuna'—an unfilled space or interval, a gap—comes from *lacūna* as well, but in the additional sense of 'a hole, pit'. Although lagoons are often associated with desire (the 1980 film *The Blue Lagoon*), recreation (UC Santa Barbara's walking tour), and health (Iceland's famous geothermal spa), they also contain environmental refugees (Carteret Islanders) and indicate communities at risk (Venice). Emphasizing the ecological and etymological interrelationship between 'lacuna' and 'lagoon', Duckert argues that lagoons are precarious hydrological sites that allow us to address, at once, the political-economic lacunae (gaps) of class and the material lacunae (lakes) of place in order to promote more nonhuman modes of social justice.

The five chapters of the third section, 'Nature's Cultures and Creatures', explore different forms of nonhuman cultural ecologies from the perspectives of anthropology, ethography, religion, and biosemiotics. In the first chapter, 'Nature/Culture/Seawater: Theory Machines, Anthropology, Oceanization', Stefan Helmreich contends that seawater occupies an ambiguous place with respect to anthropological categories of nature and culture. Seawater as nature appears as potentiality of form and uncontainable flux; it moves faster than culture—with culture frequently figured through land-based metaphors—even as culture seeks to channel water/nature's flow. Seawater as culture manifests as a medium of pleasure, sustenance, travel, disaster. Tracking these associations historically, Helmreich argues that while the

qualities of seawater in early anthropology were portrayed impressionistically, today it is technical and scientific descriptions of the form of water that have become prevalent in figuring social, political, and economic forces. The second chapter, 'Revisiting the Anthropological Difference' by Matthew Calarco, sets out to challenge the recent return to discourses that aim to develop an 'anthropological difference', namely, a sharp distinction between human beings and animals. According to Calarco, such a project is subject to thoroughgoing objections not only on scientific-empirical grounds but also in view of ethico-political concerns. Against a desire to establish distinctions between human beings and animals, the author proposes that we consider letting the distinction fall into indistinction. He points to two key upshots of thinking in terms of indistinction: first, it allows us to catch sight of the ways in which human beings come to see themselves as being profoundly and surprisingly like animals; second, it allows for a return to the ontological task of rethinking relations beyond 'the human'. Calarco concludes by suggesting that this conception of indistinction provides alternative grounds for linking a variety of movements that seek to displace anthropocentrism. The third chapter penned by Thom van Dooren and Deborah Bird Rose is titled 'Lively Ethography: Storying Animist Worlds'. It explores the possibilities of a mode of knowing, engaging and storytelling, here deemed 'lively ethography', that aims to recognizes the meaningful and entangled lives of diverse others—human and not—and that in so doing enlivens our capacity to respond to them by singing up their character or ethos. Alternating between two types of writing, the chapter offers both an exposition—laying out an analysis of ethos, liveliness, storytelling, response-ability, and becoming-witness—and a performative enactment through short ethographic vignettes that highlight some of the qualities and approaches discussed, primarily with reference to the authors' ongoing fieldwork in the Hawaiian islands. In the fourth chapter, 'Religion and Ecology: Towards the Communion of Creatures', Kate Rigby considers the importance of religion and ecology in comprising a crucial component of the wider work of the Environmental Humanities. Among the world's many diverse religions, Rigby argues, Christianity remains a dominant force globally, not only in percentage terms but also because its texts and traditions have informed the secular ethos and institutions of all Western societies. For this reason, this chapter revisits earlier critiques of Christianity's environmental legacy, along with evidence for an ecological turn that is now gathering momentum, in which she traces the lineaments of an emergent 'communion of all creatures'. This section concludes with the fifth chapter by Wendy Wheeler, 'How the Earth Speaks Now: The Book of Nature and Biosemiotics as Theoretical Resource for the Environmental Humanities in the Twenty-First Century'. Wheeler's argument is based on the idea that we participate in the world biosemiotically as one among all the other of Earth's

creatures. What we are, as humans, is an outcrop of Earth's evolutionary meanings. Our stories and poetry, technics and art, music and meaning belong to Earth and its plants and animals before they find expression in us. We are caught in a mesh of material beings made of codes and channels and also of an immaterial mesh of relations and meanings. This mesh is also what joins us to the planetary biome. By the same principle, the semiome joins us communicatively to each other and the planet. These are vital dialogic interrelationships and we should recognize biotic and semiotic communication and the interdependency of all Earth's many meanings. We are part of the text the planet writes—both writers and written.

The fourth and the final section of this book, 'EcoStories and Conversations', consists of three creative essays and a conversation with Rosi Braidotti. Whereas the creative pieces braid the fictional and the factual together to enhance ecological awareness, sensibility, and our fundamental kinship with nonhuman communities, the conversation insists on the new ethical, ecological, and cultural dimensions of the 'posthuman humanities'. Rob Nixon's autobiographically inflected essay, 'How to Read a Bridge', reflects on the variety of forces—historical, infrastructural, botanical, and ornithological—that shape the fate of a South African bridge. Against the backdrop of the widening inequities of the neoliberal order, Nixon considers the relationship between the abandoned rural poor, their severance from infrastructural service, and their dependence on exhausted ecologies. He also argues for a rapprochement between the concerns of animal studies and environmental justice. Bronislaw Szerszynski's 'The Martian Book of the Dead' introduces an imaginary future text, *Martian Book of the Dead*, which is used to prepare the dying for the experience of 'interval-being' and the possibility of liberation into the deep becoming of their planet, and thus of the cosmos. It is 2197. Mars has been settled and terraformed, and a new 'Mars-vehicle' Buddhism is established there. The Earth has entered the 'solar-system' geological period—the period in which the becoming of the planet is fully incorporated into that of a larger, evolving star system. Earth religions and cultures have embraced a radical new metaphysics of matter, time, and space. It is a new mythos of the relationship between Mars and Earth about the mutual gifting of life and animacy across billion-year time scales. This mythos spreads among the humans, artificial intelligences, and human–machine hybrids that work in the extractive industries and terraforming activities of Mars. The third essay in 'EcoStories' is by Juan Carlos Galeano, 'On Rivers', which is a personal contemplation of the author's childhood memories and stories connected to the Amazonian life. This sets him off to discover tales of riverine people and of rituals in rivers of the Peruvian Amazon—stories of 'Cobra Grande', the big anaconda, the mother of all rivers and serpents, the supernatural anaconda called 'Yakumama', and

also stories of pink dolphins, of mermaids, and spirits. Galeano relates the tales of the Amazonian world as the realm of storied matter. The conversation with Rosi Braidotti, one of the leading figures of the Environmental Humanities debate, is titled 'Can the Humanities Become Posthuman?' In this interview, conducted by Cosetta Veronese, Braidotti touches on such topics as posthuman subjects, the future of humanism, models of transdisciplinarity, human exceptionalism, and the new ethics of responsibility for the Anthropocene—one in which '[a]nimals, insects, plants and the environment, in fact the planet and the cosmos as a whole, are called into play'. Animal, insects, plants, humans, and the Earth's organic and inorganic presences: these are also the voices of the Anthropocene. Our volume was conceived as a way to heed them and reintroduce them in the narratives of our epoch. Might the narratives that this book provides be yet another step towards stronger more-than-human coalitions.

NOTES

1. *Orion Magazine* 35.1 (January/February 2014). See online at https://orionmagazine.org/article/the-new-you/.

2. Aaron Vansintjan, 'Going beyond the "Ecological Turn" in the Humanities'. 1 March 2016. See online at http://entitleblog.org/2016/03/01/going-beyond-the-ecological-turn-in-the-humanities/.

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